Splinter Report: Instrument Processing –Measurement and retracking (SAR and LRM)

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Main Themes & Major Topics

- Jason-3 instrument performances are good
- Jason-6 optimal waveform averaging has been studied
- Topex has been retracked
- Error analysis (several talks/posters)
  - Correlations among errors in geophysical retrievals
  - Effective Number of Looks in Waveforms; Optimal Weighting
- Estimation methods (several talks/posters)
  - Weighted and unweighted retracking
  - Sub-waveform pattern recognition in groups of waveforms
  - Spectral windows
- Calibration issues [for non-sun-synch altimeters, at least?]
  - Variation in σ^0 > 0.1dB due to around-orbit thermal variations
- PEACHI products for Jason-3
- “Fully-focused SAR”
  - Recommendation arising out of IP splinter and SAR splinter

Peachi Products

- CNES/CLS is making PEACHI products available for Jason-3 GDRs. (Big effort! Thank you!)
- The PEACHI allows the user to evaluate:
  - Weighted versus Unweighted Retracking
  - Numerical PTR versus Analytical Approximation
  - Improved corrections (delays, tides), etc.
- Initial evaluation by CNES & CLS of Peachi “Nelder Mead” (weighted retracking; see Poissson/Thibaut) gives improved performance with respect to MLE4, unweighted.
- External review of the product quality from expert and general users’ perspective is welcome to confirm CNES&CLS assessment.

Draft recommendation that missions enable “fully-focused SAR” processing, if possible

Recognizing that “fully focused SAR processing” has new capabilities and applications that improve precision and resolution of Earth surface properties, the OSTST recommends that SAR altimeter missions provide, insofar as possible, characterization information needed to support coherent processing throughout the time when a point on the ground is visible.

More research and development is required to consolidate our understanding of fully-focused SAR processing performance.